Completed Pollution Prevention Project Case Study

United States Department of Energy
Office of Environmental Management
Fact Sheet

Reduction of Mixed and Low Level Waste with Imaging Scanner

Los Alamos National Laboratory

Original Problem

Waste material from Hanford was being analyzed by C-INC for various technetium species by using traditional high-performance liquid chromatography and liquid scintillation counting. These methods caused the generation of mixed and low level waste, the procedures were time-consuming, and the processes had the potential for spillage and causing exposure to the employees.

The Project Solution

A Bioscan AR-2000 imaging scanner was purchased to replace the old analysis methods for this project. The gas-filled counter is able to detect the presence of radioactive species spatially on paper chromatography strips. Up to eight samples can be placed under the detector at one time.

Value of Improvement

The Bioscan AR-2000 imaging scanner actually yields more data than the old system. The volume of mixed and low level was has been reduced by over 95% with the new system since the liquid scintillation vials, liquid scintillation fluid, and pipette tips have been eliminated. The new system reduces the amount of time needed to analyze each sample by about 90%, so this lab has become significantly more productive. In addition, there is less potential for employee exposure to the samples or reagents.

Lifecycle Waste Reduction	
Lifecycle Waste Reduction	0.4m^3 / year
Commencement Date	2001
Project Useful Life (Years)	15

DOE Monetary Benefits	
Total Project Cost	$23,524
Lifecycle Savings	~$4000 / year
Return on Investment	79%

Benefits At-A-Glance

- Approximately 0.4 m^3 per year of mixed and low level waste will no longer be generated.
- The scanner reduces preparation and analysis time for each sample from 2.5 hours to 20 minutes.
- The potential for spills is reduced, and so is employee exposure to chemicals. The imaging scanner is also providing researchers with more data than the old methods.

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Summary Data	
Priority Area:	Waste Minimization Projects
Project Type:	Process Improvement
Total Project Cost:	$23,524
Lifecycle Savings:	~$4000 / year
Implementing Group:	C-INC
Benefiting Group:	C-INC
Useful Life Years:	15
Return on Investment:	79%
Lifecycle Waste Reduction:	0.4 cubic meters/year of mixed and low level waste
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